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## RAIN AND RAINMAKERS.

BY J. M. GUINN.

From the earliest dawning of intelligence in man—through all his intervening steps from barbarism to civilization, next to the struggle for existence, no other subject has so engrossed his attention as the atmospheric phenomena we call weather. Nor is this strange, so intimately is his physical welfare dependent upon climatic conditions that it would be stranger still if it were not so. The science of meteorology—if indeed it may be said that there is such a science—is comparatively young. Its kindred science, astronomy, dates its origin far back in the childhood of the race.

The star gazers on the plains of Asia evolved the fundamental facts of the science of astronomy centuries before the Christian era; but weather prophets, pagan and Christian, through all the centuries down to almost to the present, have been content to attribute atmospheric phenomena to supernatural causes—to the agency of beneficent or malignant weather makers. The gentle rain, the warm sunshine and the refreshing south wind, were the gifts of a beneficent deity; while the thunder's roar, the lightning's flash and the hurricane's blast, were the manifestations of a god's displeasure, or were attributed to the malign influence of demons.

The Indian tribes of North America have their weather makers—medicine men, who by certain observances and incantations, through the intercession of fetiches and spirits of the air, are believed to be able to change the wind and bring rain in times of drought. Years ago an old skipper who commanded a small sailing vessel that traded along the northwest coast, gave me his experience with an Indian weather maker. He had been detained by contrary winds for several weeks in a little harbor on the Oregon coast. The situation was becoming desperate, when one day the medicine man of the Indian tribe which inhabited that part of the coast, came to him and offered for the consideration of a sack of flour to change the wind. A bargain was made—the flour to be given when the wind changed. The medicine man repaired to a high bluff overlooking the harbor and began his incantations. For twenty-four hours he kept up a succession of shrieks, howls and blood curdling war whoops, occasionally vary-

ing his lingual gymnastics by frantically waving his arms in the direction he wished the wind to blow. Suddenly the wind did change, and the captain, in his anxiety to catch the favoring breeze, sailed away without giving the Indian his sack of flour. Here was proof positive to the Indians' untutored minds that their medicine man did change the wind, and proof as positive of the perfidy of the white man.

In California, during Spanish and Mexican domination, in seasons when the former and the latter rains came not; and the dreaded dry year threatened death to the flocks and herds, the people besought the intercession of some saint who was supposed to have control of the celestial weather bureau. Alfred Robinson, in his "Life in California," thus describes an "intercession" that he saw in Santa Barbara during the great drought of 1833:

"The holy father of the Mission was besought that the Virgin, Nuestra Señora del Rosario might be carried in procession through the town whilst prayers and supplications should be offered for her intercession with the Almighty in behalf of their distress. This was complied with as was customary on such occasions, and conducted in the following manner: First came the priest in his church robes, who with a fine clear voice led the rosary. On each side of him were two pages and the music followed; then four females who supported on their shoulders a kind of litter, on which rested a square box containing the figure of the Holy Virgin. Lastly came a long train of men, women and children, who united in the recital of the sacred mysteries. The figure was ornamented for the occasion with great finery, and every one who had pleased had contributed some rich ornament of jewelry or dress for its display. In this manner they proceeded from the church through the town to the beach; chanting verses between the Mysteries accompanied by violins and flutes. From the beach they returned to the church in the same order, where the prayers were concluded.

"After this performance all looked for rain with as much faith as our countrymen look for the steamer from Liverpool on the thirteenth or fourteenth day of her time of departure. Should these expectations, however, not be realized, the procession would be repeated until they were."

The belief that human agency by intercession or other means can change the laws of nature and produce storms still exists. Not twenty miles away from Los Angeles at the present time in a mountain cañon on a platform that he has erected, a man with

certain chemicals claims that he can produce rain to order. It is reported that he claims to have produced the recent storms with his rainmaking ingredients. As proof positive he shows that the rainfall was heaviest near his tower and gradually diminishes as you descend into the valley. He seems to be unaware of the fact that in some places in the San Bernardino mountains sixty, seventy and a hundred miles away, the rainfall was more than double the quantity that fell where his platform is located. If he was alone in his belief that rain can be produced by artificial means it might be attributed to his conceit, but the opinion that human influence can effect changes in weather conditions is widespread.

There is a report current that Rainmaker Hatfield is to receive \$1000 from some benevolently disposed citizen on condition that he causes a rainfall of eighteen inches before the first of May, 1905. If the report is true it appears that we have persons who are willing to back their faith in rainmakers with their coin.

At what point or place the pluvial downpour is to be measured for the award the report does not state. There has been a greater difference this year in the rainfall at different points than usual. At present writing (February 17, 1905) Forecaster Franklin reports that the rainfall at the Weather Bureau station, located near the center of this city, is 12.19 inches. In the eastern portion of the city a local observer reports a small fraction less than 17 inches. On Mount Wilson 25 inches are reported and at some points in the San Bernardino mountains as high as 36 inches have fallen, while at Santa Monica the record gives only nine inches. The difference in the rainfall between the extreme eastern and that in the extreme western limits of the city is six inches; the eastern receiving that excess of favors from Jupiter Pluvius or Hatfield. It might be well for Hatfield until his financial backers call time on him to distribute the moisture that he coaxes from the clouds more evenly and thus avoid complications that may rob him of his award.

For centuries good Christian people throughout Europe and America believed in the power of witches to produce devastating storms and many an innocent person has been burned at the stake for complicity with Satan in producing destroying floods. During the Middle Ages the belief in the diabolical origin of storms was universal. The great churchman, Bede, had full faith in it. St. Thomas Aquinas gave it his sanction. "It is," he says, "a dogma of faith that the demons can produce winds, storms and rain of fire from heaven." Luther declared that he

had himself calmed more than twenty storms caused by Satan. If Hatfield's rain machine should slip a cog or get beyond his control and bring upon us a devastating flood he is in no danger of being burned for a witch. But the belief in the diabolical origin of storms still exists. It is only a few years since that an evangelist holding forth in this city told how he by prayer turned aside a storm raised by Satan that threatened to destroy his tent where he was preaching.

It is exceedingly fortunate for us that the laws of nature can not be amended, suspended or set aside at the caprice of the individual. Contemplate even from a local standpoint, the power for evil that a man would have who could produce rain at will. Suppose out of a spirit of pique or revenge because he did not get a promised reward for his services he should turn loose his rainmaking apparatus in midsummer and let it run until it flooded our valleys and made tropical swamps of our fields—producing malaria, miasma, mosquitoes and other afflictions of the tropics—ruining our climate and drowning out our tourist crop; how earnestly we would pray for a restoration of Nature's laws and even yearn for occasional dry years. Our recent storm extended from Alaska to Mexico and from the Pacific Coast to the Rocky Mountains. A rainmaker who at will, can cause atmospheric changes that affect half a continent comes dangerously near being omnipotent.

Our rainstorms are originated by electrical disturbances in the North Pacific ocean. They enter the land at some point between Southern Alaska and Northern California. Occasionally one drifts down the ocean with the current and strikes the land south of Point Concepcion. The most of the storms that reach us come down the coast from the northwest and arrive here from 36 to 24 hours from the time they are first reported in the north. There is a paradox about our rainstorms that I do not recollect to have seen explained. Our storms travel down the coast from the northwest, but it is always a southeast wind that brings rain.

It is not the rain that travels down the coast, but a wind current. The northwest wind is an upper cold current, the southeast wind a lower warm current of air. The meeting of the winds produces electrical disturbances that act as condensers of the moisture that is always present in the atmosphere. This is my explanation of the seeming paradox of a southeast rainstorm when according to all appearances we ought to have a northwest one. You can take it for what it is worth.

There is a very prevalent belief that great battles and heavy discharges of artillery are followed by rain-storms.

I recently read what purported to be a scientific article on the causing of rainfall by mechanical disturbance of the atmosphere. The author delved into history to prove his theory. He showed that all the great battles of the civil war as well as of other wars were followed by rain-storms. It happened to be my fortune or my fate to take part in some of the great battles of the civil war which this author cites to prove his theory. As I was there and he was not I think I am the better authority. The battle of Antietam was one of the bloodiest battles of the war. Between sunrise and sunset there was an incessant roar of artillery, but no rain followed. At the second battle of Bull Run for two days there was a continuous roar of musketry and artillery, yet no rain followed except a little thunder storm of a few moments duration which occurred about midnight after the battle when our army was on the retreat. With the first crack of thunder some of the teamsters of our baggage train which was ten mules long cut loose their saddle mules, abandoned their wagons and made a mad ride for Washington. They mistook the crack of thunder for the boom of artillery and supposing the train attacked started off on a wild rush to carry the news to the Secretary of War or somebody else at the capital. Had they known of this scientist's theory that rain always follows a battle they would have been listening for thunder and would not have made the mistake they did. It did rain the 4th and 5th of July, after the battle of Gettysburg in 1863, and so it did the 4th and 5th of July, 1904, and yet there was no fighting within ten thousand miles of Gettysburg last year. At the siege of Petersburg, in the fall of 1864, there was a constant succession of artillery duels with guns of the heaviest calibre. According to the theory there should have been continuous rains. On the contrary it was rather a dry season for that country.

How will the theory of rain after a battle apply to the war between Russia and Japan. I cannot say, as weather reports from the seat of war are scarce. I have no doubt some theorist will discover that our recent rain-storms are due to the heavy cannonading at the siege of Port Arthur, the battle of Mukden, or the sortie on Meteor Hill. The concussions of the atmosphere caused by the discharge of heavy artillery disturbed the meteorological conditions of the Kuro Siwo or Japan current and sent the rain currents drifting down the northwest coast of America.

There is no more popular topic of conversation than the

weather. If you doubt this listen to the opening of a conversation between persons when they meet. And yet we know less about the weather than almost any other subject you can name. What was the cause of the climatic changes that sent the icebergs during the great ice age drifting over nearly all the land of North America? What changed the tropical regions that once surrounded the North pole into a country of eternal ice and snow? Or coming near home, what dried up the arm of the sea that once covered what is now the Colorado desert? What asmospheric cataclysm depopulated and made almost a desert of the once fertile and densely inhabited plains of Arizona? Why does it not rain in California during the summer months?